

ART OF DROP FORGING HAS ALMOST REACHED STATE OF PERFECTION

Wonderful Work Is Produced by Great Hammers in the Shaping of Different Parts

SMITHY WAS ORIGINATOR

Later Railroad Blacksmith and Afterwards Automobile Men Brought Science to Present Efficiency.

To a great extent the tremendous production records attained by the larger American motor car factories in the past few years have been accomplished through the rapid strides made in the development of the art of drop forging.

From the very beginning of the automobile industry, engineers have sought means of obtaining maximum strength in the parts subjected to heavy strain, without adding useless weight to the completed car. Drop forging and the use of high grade chrome Vanadium steel proved the solution of the problem, and today the manufacturer who builds the majority of the parts used in his car, counts an efficient forge shop as one of his most valuable possessions.

Our old friend, the village blacksmith, was the first to drop forge. Some 50 years ago a member of this brotherhood evolved the scheme for using a steam hammer on the larger forgings, and to make. But in order to achieve the desired result, he was compelled to work out the material almost to the desired shape by them with the aid of portable tools which were used in conjunction with his crude steam hammer, the forgings were finished to size. With this method, much depended upon the skill of the smith, and the work was more or less a matter of guess work. The human element was strong.

Now Purely Mechanical.

The railroad blacksmith took the methods of his predecessor and improved upon them, and the experts in the big sewing machine, shoe machinery and harvesting machinery factories added inventions and improvements which still further simplified the process.

The automobile manufacturer, however, has brought the art down to its greatest point of efficiency, and men who understand the principles of motor car construction are inclined to measure the longevity of an automobile by the number of drop forgings entering into its construction.

From the fact that drop forging is nowadays purely mechanical, thus eliminating the human element of skill and artistry formerly acquired by the smith, the methods used are extremely simple and exact, resulting in reduction in the cost of production, and in addition, uniformity of product is absolutely assured. In some cases the production cost is reduced on a ratio of about 40 or 50 to 1. Forgings can be made in greater variety, and those which were most difficult and even impossible to finish over the anvil, are now formed with apparent ease under the drop hammer. There is almost no limit to design, and shape from a cocked hat to a frying pan can be formed. In addition, the work is accurate and finished.

Advantages Grasped.

As pioneers in the manufacture of parts for automobiles, Dodge Brothers, who have just placed their own car on the market, rapidly grasped the advantages of drop forging, and their forge plant in Detroit is pointed out as typifying all that is best in the business. The huge steam hammers with their falling weights, as heavy as two to three tons, are almost constantly in operation, turning out parts for the new car.

Here the visitor can see the standard steel stock, heated to a white glow and then placed under the hammers, coming from them magically formed into front axle, connecting rod, crankshaft, camshaft, or any other of a hundred and one parts. There is a special set of dies for each part, the hammer head receiving one-half and the bed of the machine the other. The first set breaks down the stock into the general shape required, while the second set shapes the part. Sometimes both sets are in one hammer, if the part is small enough to admit two sets side by side. Often break down and finishing hammers are separate.

To the visitor making his first trip through a forge shop, it is a source of considerable wonder as to how the men in charge of the hammers stand the terrific heat from the white-hot metals. The answer is found in the type of building erected to house the forge shop. The typical of the big modern manufacturing institutions of the kind. The buildings are long and narrow, of steel and concrete construction, and built so that during the summer months it is possible to open practically all sides of the structure and admit every particle of air.

DON'T DRIVE IN RUT, TEXAS CLUB'S MOTTO

All Automobilists Urged to Follow Example Set; Conservation Important.

"All automobilists should be expounded of the Texas Good Roads club's motto, 'Don't drive in the rut,' in the opinion of C. L. Boss, local distributor of the Hudson line.

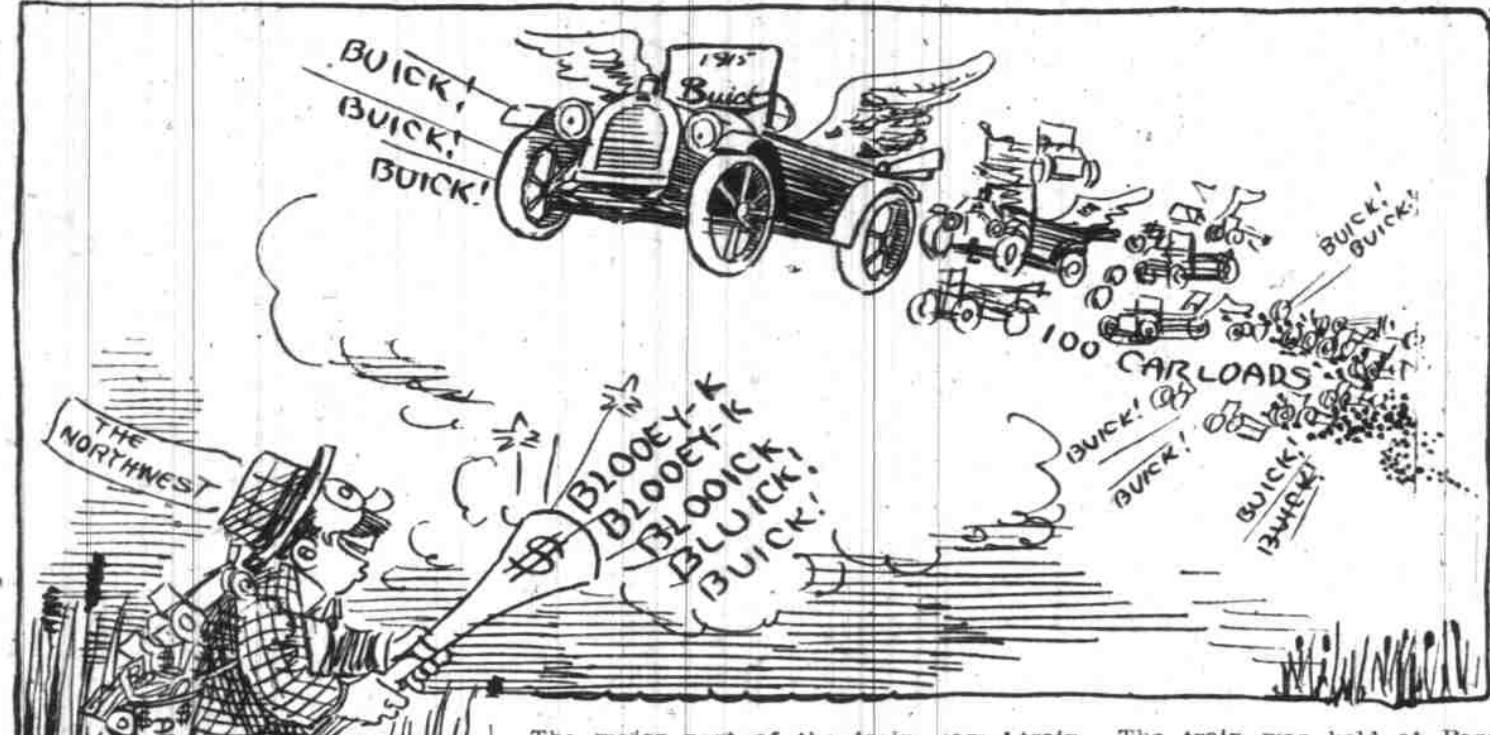
"Conservation of good roads is just

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DELIVERY OF BUICK SHIPMENT BEGINS



The Buick special train has reached its destination, and delivery of the 1915 carloads contained therein has been made to the several agents of the Howard Automobile Co. on the Pacific coast.

The train started from Flint, Mich., February 20, and was run intact to Cedar Rapids, Iowa, where the 38 carloads consigned to California points, and 12 carloads consigned to Oregon points, were withdrawn from the train, and run as a special train over the Central route to California, and thence to Oregon.

UPKEEP OF YOUR MOTOR

"Every year thousands of internal combustion engines are thrown into scrap heaps, totally ruined by friction," according to C. F. Wright, of the local firm of Ballou & Wright, one of the largest auto accessory dealers in the Pacific northwest.

"An appreciation of the vital importance of proper lubrication and a slight knowledge of the conditions necessary for satisfactory operation, would be the means of adding many years of usefulness to every engine. For the owner of an automobile, motor boat or motorcycle, the lack of a little knowledge is a dangerous thing. The points noted below, continued by Mr. Wright, should be thoroughly understood by every operator of an internal combustion engine."

- Points Are Given.**
- All drain cocks are closed.
 - Valves are properly timed.
 - Magnetos are properly timed.
 - Spark plug gaps are properly set.
 - Carburetor is properly adjusted.
 - Muffler is free from soot.
 - Water circulating system is in order.
 - All bearings are correctly fitted.
 - Compression space is free from carbon.
 - Fuel and oil supply are correct.
 - The causes for poor operation are: Leakage of compression—broken plugs, faulty piston rings, too much piston clearance, use of oil of too light a body, valves not seating, leaky gaskets, broken piston ring lock pin, faulty ignition system wires.
 - The motor knocks because: Ignition is advanced too far.
 - Compression too high.
 - Spark plugs are defective.
 - Compression too high due to condensed carbon or projecting threads.
 - Cylinders are carbonized.
 - Piston head too thin.
 - There is too much piston clearance.
 - Bearings have too much slack.
 - Piston or piston ring strikes ridge in cylinder.
 - Ignition is out of adjustment.
 - Flywheel bolts are loose.
 - Engine is overheated from lack of water or oil.
 - The overheating of an engine is caused by: Ignition being timed too late.
 - Valves not seating properly.
 - Radiator or water pipes being fouled.
 - Water pump being out of order.
 - Fan belt slipping.
 - Muffler being clogged.
 - Lubrication being insufficient or poor.
 - Radiator being too small for motor.
 - Brakes dragging.
 - Motor being new and not thoroughly "run in."
 - Carburetor being out of adjustment.

As important as the encouragement of good road building, Good roads cost a lot of money and a motorist pays a good deal toward it. The owner of an automobile should feel the responsibility in making his share of the investment in good roads go as far as possible.

"Bad roads discourage motoring, yet to a certain extent motorists are responsible for them. How often have you seen a well oiled road in fairly good condition, or a new section of highway built, become almost impassable by constant usage of a rut that was first marked by the initial car to travel over it. Six inches of road, often 12 to 16 feet wide, is called upon to stand the strain of all the traffic over it. This really should not be. Of course, it is the natural tendency to drive on the crown of the road, but in principle it is wrong if the road is to be used to the best advantage.

"After these ruts are started and the surface has been broken through, come the chuck holes and dust holes, and in rainy seasons you have the water to contend with, which softens the surface and decreases the efficiency of material used in making the road.

"Don't drive in the rut," if lived up to, would have thousands of dollars annually in the building of roads, increase the pleasure of the tourists many times, and in the end save the automobile.

The major part of the train, comprising 51 carloads for the Pacific northwest, was incorporated into another special train and taken to St. Paul, Minn., where it was turned over to the Northern Pacific Railway Co., and run on a daylight schedule from that city to Seattle.

The train was on exhibition in the yards of the Northern Pacific, in the business center of Spokane, all day Thursday, March 11. At Spokane six carloads for the Northwest Buick Company's Spokane house, one carload for Ho, Idaho, seven carloads for Colfax, Wash., one each to Reardan, Harrington, Bluestem and Odessa, and two to Waterville, were set out. Friday morning the train started on a daylight schedule across the state of Washington.

At Ritzville, two carloads were put on the siding, and Chris Belker, the Buick agent there, displayed his activity by unloading one of the carloads before the departure of the

train. The train was held at Pasco Friday night, and passed through the Yakima valley Saturday.

The special was accorded a warm welcome in all the towns of the Yakima valley.

One carload was left at Sunnyside and two at North Yakima. At North Yakima, Mr. Schneider of the local Buick agency, set to work unloading his cars. The train proceeded to Ellensburg and there lay over night. The journey over the Cascades was made Sunday. One carload was set out at Auburn for that point, and three carloads for Tacoma, one for Centralia and one for Hoquiam were likewise left behind. The remainder of the train, consisting of seven carloads for Seattle, two for Everett, two for Stanwood and two for Bellingham, reached Seattle late Sunday night.

Mel G. Johnson, local manager for the Howard Automobile Co., accompanied by R. C. Buchanan of the Spectator, of this city, and F. H. Fogarty, assistant general freight agent for the Northern Pacific railway, went from Portland to Spokane, and accompanied the train across the state of Washington.

That the market for Buicks has not been supplied by this train is evidenced by the fact that Mr. Johnson secured orders for five more carloads for immediate shipment to Spokane, one carload to Sunnyside, one to Yakima, and ten to Seattle.

INTERESTING INSIGHT INTO METHODS OF AGENTS IS SECURED

Advice Is Given as to When and How to Use Demonstration Car.

By E. E. Gerlinger.

By means of a series of questions submitted to dealers, the manufacturer of the automobile recently gained an interesting insight into the business methods employed by their agents. One fact was brought out very forcibly in the progress of the investigation—that dealers look upon their demonstration car as one of their greatest assets for promoting business and closing sales.

Many dealers, while strongly endorsing demonstrations, expressed themselves as disfavoring lengthy rides for prospective buyers for the reason that buyers generally are better educated in the merits of cars than in former years, and can pass judgment on the performance of a car almost instantly.

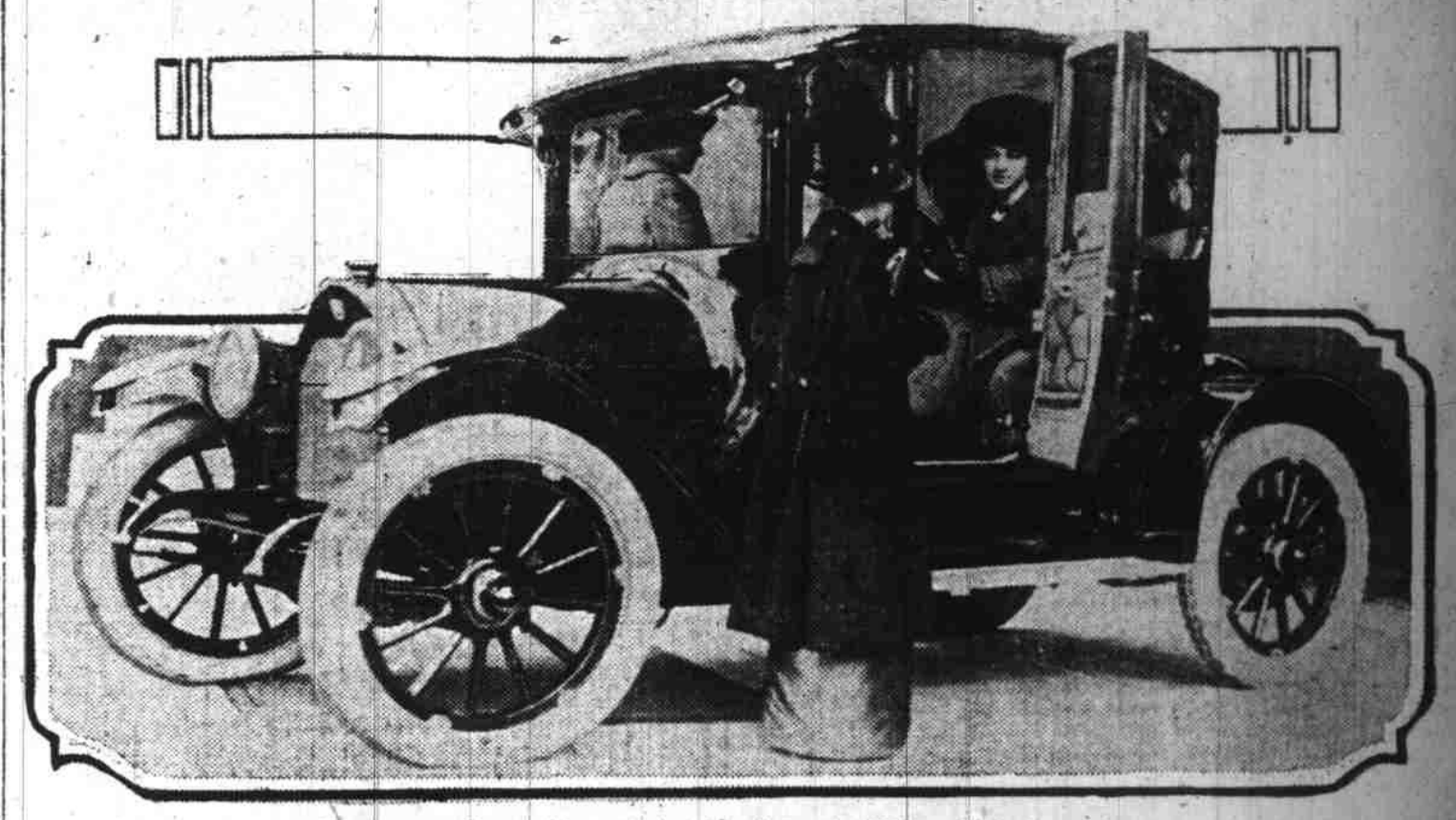
It was declared by some of the dealers that a drive of a few blocks is all the demonstration necessary for the average customer of today, and that some do not require any demonstration at all.

Attention was called to the striking change which has come over buyers in this respect since the earlier days of the business, when it was always thought necessary to drive long distances and put a car through divers hard tests to prove that it would really climb steep grades, pull through deep clay mud and attain the maximum speed claimed for it. Today it is only the occasional prospect who demands these things; the average buyer takes them for granted.

From the opinions thus obtained from dealers, the Olds company was able to compile statistics revealing the business methods in practice among their agents, and these statistics served as a basis for cooperative work among the dealers.

Believing that the dealers and the public would mutually profit by a uniform procedure in the matter of demonstrations, the manufacturers suggested to dealers that they limit demonstrations to from ten to 30 minutes, except in extraordinary cases; that they avoid demonstrating until a prospect expressed definite approval of

HANDSOME NEW CAR JUST ARRIVED FROM EAST



Reo coupe brought out by Northwest Automobile company.

the external appearance and details of the car; that they avoid suggesting a demonstration, but on the contrary, give the prospective buyer the opportunity of asking for one if interested, and that they avoid selling talk during the drive and allow the customer to give his undivided attention to the merits of the car itself, except to call attention to certain features in the car's performance.

Super-Sweepstakes Being Contemplated

Event if Pulled Off at Indianapolis Will Be Culmination of All 500 Mile Races to Date.

Indianapolis, Ind., March 20. — A super-sweepstakes, the culmination of all 500-mile races to date, is now being contemplated by the Indianapolis motor speedway management, the length of the contest to be a thousand miles and the purse \$100,000. The originator of the plan is A. C. Newby, president of the National Mo-

tor Vehicle company, and a director of the speedway, whose idea it is to stage a contest such as never has been seen in the world before.

The race is to be invitational, entry being limited to makes of cars having won previous 500-mile contests. To date four such makes are eligible—Marmon, Delage, National and Peugeot, with possibly a fifth after the next contest has been run. Entering probably five cars each, this would make a field of 25 machines, the absolute cream of the racing world, with the pick of racing drivers.

A qualifying speed of 90 m. p. h. for 20 laps of the speedway is to be necessary, and the race is to start at 6 a. m. Drivers are to take tricks during the contest of 250 miles each, two drivers to a car. If the race goes through, it will easily be the greatest ever run, say racing experts informed of the plan.

At the close of 1913 the total area planted in rubber in the Federated Malay states amounted to 433,324 acres.

Firestone

Tires Win Phoenix Grand Prix Race at Los Angeles

Barney Oldfield, in a Maxwell, Finishes First Traveling Three Hundred One Miles at Sixty-Eight and One-Half Miles Per Hour Without a Stop

Over this hot macadam road, which ground down tires like a giant emery wheel, Firestone Tires again achieve an international victory March 17th. Ninety-seven laps were covered in this race, which meant that each of the three right angled turns were rounded 97 times—an additional terrific tire test. Out of 19 entrants only six finished the race, so severe was the test of men, machines and tires.

This is only one of the many drastic tests through which Firestones have come victorious in recent months.

In the Los Angeles-Phoenix road race—the celebrated "Cactus Derby"—Firestone Tires finished first, second and third and in the El Paso-Phoenix road race run at the same time, Firestones won first. Those two gruelling races over 1200 miles of unfrequented mountain and desert roads also put tires to unprecedented tests.

Study the reasons for this service in the illustration and compare Firestone prices with the prices of ordinary tires. Then you will always use the tire of most miles per dollar.

Case-Round Tread	Case-Non-Skid	Grey Tube	Red Tube
30x3	\$ 9.40	\$10.55	\$2.20 \$2.50
30x3 1/2	11.90	13.35	2.60 2.90
32x3 1/2	13.75	15.40	2.70 3.05
34x4	19.90	22.30	3.90 4.40
34x4 1/2	27.30	30.55	4.80 5.40
36x4 1/2	28.70	32.15	5.00 5.65
37x5	35.55	39.80	5.95 6.70
38x5 1/2	46.00	51.50	6.75 7.55

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